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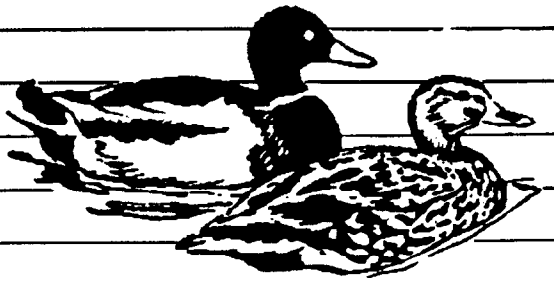

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Burn Data Base: A Prescribed and Wildfire Tracking Program

Fire is an important management tool for many parks and refuges under the auspices of the Department of Interior. Prescribed burning is a common practice for controlling habitat succession and risk of wildfire. A cooperative research study between the National Wetlands Research Center, Louisiana State University, and the St. Marks National Wildlife Refuge has resulted in a fire research and management tool in the form of an interactive data base and query system. This system is being used to track the fire history of St. Marks NWR and to facilitate fire research and management.

Fire Management Plan and Application

St. Marks National Wildlife Refuge is divided into three separate geographic land units; each unit is further divided into management compartments usually defined by roads and property boundaries. Each management compartment contains one or more burn blocks. Presently, there are 178 designated burn blocks, most of which are burned on a 3-year rotation. Fire management includes maintaining three separate burning seasons—winter (October–March), spring (April–June), and summer (July and August). The difficulty of tracking such a complex and aggressive fire program has warranted the development of a specialized computer program and data base for recording prescribed and wildfire activity and for assisting fire scheduling and planning.

Burn Data Base Development

The burn data base is a menu-driven program designed for easy data entry, acquisition, and query specific to fire management goals and objectives. The program is written in dBase 3 and 4 and C as a self-contained program that can run with or without the parent software. The program centralizes the records of three management units,

178 burn blocks, and multiseasonal burn objectives into a single repository and data management system. The initial window environment allows the user to choose the desired data base activity, including the following: entering new records, editing existing records, deleting records, browsing the data file, querying the data base, listing data segments, printing data segments, loading a help menu, loading a utilities menu, and quitting the program.

The same menu set of fire parameters is accessed whether the user is adding, editing, deleting, or browsing the data base. Fire descriptors include the date of burn, acres burned, firing type, fire method, cost in materials, labor, and flight, burn objective, burn index, fire behavior, percent crown scorch, percent understory consumed, percent area consumed, daily temperature (minimum, maximum, and at 1300 h), humidity, midflame wind direction, midflame wind speed, transport wind direction, transport wind speed, mixing height, etc. All abbreviations and codes used in the burn data base are standard abbreviations or codes used in the Department of Interior Individual Fire Reports (DI-1202). The program performs an integrity check on all data entries to ensure that values and text are within format and logical bounds.

Querying allows the user to perform analytical operations on all or selected elements of the data base. The user invokes a submenu to identify the spatial level on which to conduct a search and summarization. The query process allows the user to list or summarize any number of conditional sorts of data elements as specified. An error-checking subroutine prevents the user from attempting invalid operations, such as averaging, on data that is strictly descriptive information rather than numeric input. The user can repeat as many different inquiries as necessary before leaving the operation.

Utility routines permit the user to copy all or portions of any given search exercise to a designated path. A list of indexes and abbreviations can be pulled up and file backups can be performed.

Research and Management Implications

A cooperative research study is under way to understand what the long-term consequences of fire disturbance are that requires baseline data of fire history past and present, prescribed and wildfire. St. Marks NWR offers a fairly complete history of fire management that can be used to verify successional trends under different fire regimes. Experimental plots have been in place for a decade in longleaf pine (*Pinus palustris*) sandhills and flatwoods to study the effects of fire frequency and seasonality on plant growth and succession. The development of the burn data base program offers a tool with which researchers can reconstruct the fire history of a given landscape and relate the long-term effects of fire on community structure and species distribution. Findings from field studies will be used to supplement landscape simulation models for predicting potential consequences of global climate change and the threat of more frequent wildfires along the coastal plain of the Gulf of Mexico.

The burn data base program was specifically designed to help fire managers with tracking prescribed and wildfire activity. More important, it provides a protocol for assessing past fire history and for planning future fire schedules and priorities. An electronic copy of the burn data base program and user guide can be obtained by request from the authors. The program code was written by W.J. Platt, Xinhang Liu, and Rolf E. Olson under contract support from the National Wetlands Research Center Global Change program.

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